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\$15,000 toward an art building for the university, providing a \$100,000 building shall be erected on the campus within six years.

By the will of the late Susan S. Clark, of Hartford, Conn., just admitted to probate, Trinity College is to receive \$10,000 for the support for two scholarships.

THE library of the University of Missouri has received a gift of about 2,000 volumes, chiefly on physics and chemistry, from Dr. A. Linton, of St. Louis.

A FELLOWSHIP, to be called the Geoffrey Fellowship, of the value of £100 a year for three years, has been presented to Newnham College, Cambridge, and will be awarded in June, 1898. The Geoffrey Fellow will be required to reside at Newnham College, and to pursue independent study in some department of learning, letters or science.

THE committee of the Charing-cross Hospital Medical School has passed the following resolution: "That the committee of the Charing-cross Hospital Medical School respectfully urges the government to introduce, early in the ensuing session, a bill on the lines of the London University Commission Bill, 1897. Further, the committee hopes that on this occasion the government will give sufficient time and support to the bill to insure its passing through both Houses of Parliament."

AN election to the Isaac Newton studentship of Cambridge University will be held in the Lent term, 1898. The studentship, which is of the annual value of £200, is for the encouragement of study and research in astronomy (especially gravitational astronomy, but including other branches of astronomy and astronomical physics) and physical optics. The persons eligible are Bachelors of Arts of the University who will be under the age of 25 years on January 1, 1898.

THE University of Zurich has 713 students, of whom as many as 333 are foreigners. 135 of these are from Russia. There are more women than men in the medical department.

THE Quain professorship of physics in University College, London, will be vacant at the end of the present session by the resignation of

Professor Carey Foster. Candidates for the chair should send their applications by Tuesday, March 1st. 'The Curators of Patronage' of the University of Edinburgh announce that candidates for the chair of moral philosophy, vacant by the death of Professor Henry Calderwood, must send in their applications not later than March 31st.

#### DISCUSSION AND CORRESPONDENCE.

##### WATER SURFACE TEMPERATURES OF LAKE TITICACA.

TO THE EDITOR OF SCIENCE: A few observations of the temperature of the surface waters of Lake Titicaca, made during a recent trip across the lake, may be of interest to the readers of SCIENCE.

Lake Titicaca lies on the elevated plateau of Titicaca, partly in Peru and partly in Bolivia, at an altitude of 12,505 feet above sea-level. Its large size, its altitude, and the climatic conditions of the region in which it is situated, together with the historical associations connected with it, combine to make it in many respects the most interesting lake in the world. The following observations—unfortunately very incomplete—were made during the steamboat trip from Puno, situated on the Bay of Puno, at the western end of the lake, to Chililaya, a small village near the southern extremity of the lake. Chililaya, the landing place for passengers and freight going to La Paz, is about 100 miles from Puno, and 36 miles by carriage road from La Paz.

The steamer left Puno at 8 a. m., November 26th, and reached Chililaya at 7:30 p. m., the same day. At 8 a. m., before leaving the wharf at Puno, the air temperature was 56.0° and the water 60.9°. There were at that time scattering cirrus clouds, and a gentle breeze from N.E. The air and water temperatures during the remainder of the day were as follows: 9 a. m., air, 50.0°; water, 59.5°. 10 a. m., air, 53.2°; water, 59.0°. 11 a. m., air, 51.8°; water, 57.2°. 12 m., air, 51.2°; water, 57.7°. 1 p. m., air, 50.9°; water, 57.9°. 2 p. m., air, 54.2°; water, 58.2°. 3 p. m., air, 54.8°; water, 58.3°. 4 p. m., air, 54.1°; water, 57.9°. 5 p. m., air, 49.8°; water, 57.9°. 6:15 p. m.,

air,  $53.5^{\circ}$  (in lee of land); water,  $57.8^{\circ}$ . The conditions of sky and wind during the day were a light to fresh breeze from NE, and scattering cirrus clouds or clear sky over the lake. These observations, incomplete as they are, are of some interest. The higher temperature of the water near shore, where the lake is shallow, and in the Bay of Puno, which is pretty well cut off from the main body of the lake; the slight diurnal variation of temperature, reaching a maximum at 3 p. m., and the prevailingly higher temperature of the water surface over that of the air, are facts that seem to be rather clearly indicated as far as this one set of observations is concerned.

On November 28th, during the return trip of the steamer, observations of air and water surface temperatures gave the following results: 7 a. m., air,  $52.1^{\circ}$ ; water,  $56.5^{\circ}$ . 8 a. m., air,  $51.1^{\circ}$ ; water,  $57.0^{\circ}$ . 9 a. m., air,  $51.9^{\circ}$ ; water,  $57.1^{\circ}$ . 10 a. m., air,  $56.7^{\circ}$ ; water,  $57.7^{\circ}$ . 11 a. m., air,  $52.5^{\circ}$ ; water,  $58.2^{\circ}$ . 12 m., air,  $55.1^{\circ}$ ; water,  $57.9^{\circ}$ . 1 p. m. (outside Bay of Puno), air,  $57.7^{\circ}$ ; water,  $59.5^{\circ}$ . 2 p. m. (in Bay of Puno), air,  $62.1^{\circ}$ ; water,  $60.4^{\circ}$ . 5 p. m. (at Puno mole), air,  $49.0^{\circ}$ ; water,  $62.0^{\circ}$ . The meteorological conditions during the day were an overcast sky (cirro-stratus) and light southeast wind, or calm, till 11 a. m., when the wind changed to northeast, and gradually increased, with increasing cloudiness (alto-stratus and cumulo-nimbus) until it reached about twenty-five miles an hour. The sky remained dark and threatening during the rest of the afternoon, but the wind died down soon after 4 p. m. The water temperatures show the diurnal increase up to 11 a. m., after which hour, owing probably to the increasing cloudiness and the change in wind direction, there came a fall in temperature in the open lake. In the Bay of Puno, as on the outward trip, the temperatures were higher than in the main body of the lake. Throughout the day, except at 2 p. m., the air temperature was below that of the water.

The clouds noted during the two trips across the lake were also interesting. On the first day, during the whole of which the sun was shining brightly, there was a very active growth of cumulus clouds over the mountains border-

ing on the lake. These clouds were first noted at 8:15 a. m. It was very noticeable, during the entire day, that the cumuli were over the land, where the rapid warming of the surface gave rise to ascending currents of air, and not over the lake, the sky over the water remaining clear, or showing light cirrus only. This phenomenon is very commonly noted in the neighborhood of large bodies of water, as in the case of our own Great Lakes. Another fact of interest was that the cumuli were better developed over the eastern shore of the lake, where the mountains are higher, than over the western shore, which is lower. During the morning the cumuli developed rapidly into cumulo-nimbus clouds, whose tops, blown southwestward over the lake, soon broke off from their bases, and dissolved as they descended to lower levels, being no more supported by ascending currents of air from below. About 2 p. m. the cumuli reached their greatest development, and at 4:30 began rapidly to dissolve into long lines of degraded cumuli. The height of the latter at 5 p. m., determined by reference to the heights of the Bolivian Andes behind them, was about 15,000 feet above sea level. It was noted that there was a considerable development of cirrus over the cumuli during the morning hours of this day, thus indicating a relation between the cumulus, formed at a lower level in the ascending current, and the cirrus, formed at a second higher level. At this second level, as explained by Abercromby, the diminished amount of vapor which the ascending current contains after the formation of the cumulus reaches its second condensation point, and a second layer of cloud, the cirrus, is formed.

As yet no careful study has been made of the meteorology of the Lake Titicaca district, and nothing definite can be said as to the influence of this body of water upon the climate of the surrounding country. There can, however, be little doubt that the lake must modify this climate to a considerable extent, although the surrounding mountains would confine this influence to the immediate vicinity of this lake.

R. DEC. WARD.

HARVARD COLLEGE OBSERVATORY,  
AREQUIPA, PERU, December 1, 1897.